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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|----------------------------|-------------|----------------------|----------------------------|------------------|
| 10/658,597 | 09/09/2003 | Arnold P. Kehrl | 05770-189001 / AMSC-633 | 1923 |
| 26161 | 7590 | 08/09/2007 | EXAMINER | |
| FISH & RICHARDSON PC | | | PARRIES, DRU M | |
| P.O. BOX 1022 | | | ART UNIT | PAPER NUMBER |
| MINNEAPOLIS, MN 55440-1022 | | | 2836 | |
| | | | MAIL DATE | DELIVERY MODE |
| | | | 08/09/2007 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/658,597 | Applicant(s) KEHRLI, ARNOLD P. | |
| | Examiner Dru M. Parries | Art Unit 2836 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-11 and 13-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-11 and 13-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. The Examiner would like to request the Applicant, in future correspondence, to use the correct status indicators for the claims to comply with 37 CFR 1.121.
2. Applicant's arguments filed May 29, 2007 have been fully considered but they are not persuasive. Regarding to the amendment to claims 1 and 10, Morita teaches a current-limiting device, which can increase its resistance level when the current through a superconductor exceeds a critical level. The increase in resistance limits the current (and in turn, the power) by a variable amount depending upon the amount of current that was flowing initially and the increase in resistance level.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3, 5, 7 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sinha et al. (2003/0183410) and Morita (6,344,956). Sinha teaches first and second transmission lines in parallel, and the second line including a superconductor ([0134]; Fig. 29). It is also inherent that the second impedance characteristic is less than the first, based on the superconductor (also see [0144]). He also teaches the superconductor being a cold-dielectric high temperature superconductor (Fig. 5). He also teaches a refrigeration system for cooling the high temperature superconductor ([0137]). Sinha fails to teach the use of a power flow

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controller, which is a reactor. Morita teaches a power flow controller, which selectively controls the magnitude of the power flowing through a superconductor, where the controller could be a reactor. Morita also teaches the power flow controller, which can increase its resistance level when the current through a superconductor exceeds a critical level. This increase in resistance limits the current (and in turn, the power) by an incremental and variable amount depending upon the amount of current that was flowing initially and the increase in resistance level (Col. 1, lines 35-59; Col. 8, lines 30-36). It would have been obvious to one of ordinary skill in the art at the time of the invention to add a reactor onto the superconductor transmission line of Sinha's invention to regulate the power flow through the line and also reacts quickly to short-circuit accidents.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sinha et al. (2003/0183410) and Morita (6,344,956) as applied to claims 1 and 3 above, and further in view of Talisa et al. (5,878,334). Sinha teaches a superconductor being an oxide (Abstract), but fails to specify exactly what type of oxide superconductor. Talisa teaches the use of a high temperature superconductor made of Tl-Ba-Ca-Cu-O. It would have been obvious to one of ordinary skill in the art at the time of the invention to use Talisa's superconductor in Sinha's invention since it is known in the art and the exact type of superconductor that Sinha describes isn't explicitly known.

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sinha et al. (2003/0183410) and Morita (6,344,956) as applied to claim 1 above, and further in view of Shimomura et al. (JP 11122793A). Sinha and Morita teach a multi-line power transmission system. Neither reference explicitly teaches what the first transmission line is made of. Shimomura teaches a power transmission line which is a cross-linked polyethylene power

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transmission line (USE). It would have been obvious to one of ordinary skill in the art at the time of the invention to implement this transmission line into Sinha's invention since it is known in the art as a working power transmission line that carries high voltages and Sinha doesn't teach a specific type in his invention.

7. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sinha et al. (2003/0183410) and Morita (6,344,956) as applied to claim 1 above, and further in view of Hingorani (5,420,495). Sinha and Morita teach a multi-line power transmission system. Neither reference explicitly teaches a bi-directional power flow controller which is also a phase angle regulator. Hingorani teaches a bi-directional power flow controller which also regulates the phase angle (Col. 2, lines 45-47, 58-60). It would have been obvious to one of ordinary skill in the art at the time of the invention to implement this controller into Sinha's invention so that the operator can have more control over the flow of power in the system.

8. Claims 10, 11, 13-14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sinha et al. (2003/0183410), Morita (6,344,956) and Hingorani (5,420,495). Sinha teaches first and second transmission lines in parallel, and the second line including a superconductor ([0134]; Fig. 29). It is also inherent that the second impedance characteristic is less than the first, based on the superconductor (also see [0144]). He also teaches the superconductor being a cold-dielectric high temperature superconductor (Fig. 5). He also teaches a refrigeration system for cooling the high temperature superconductor to keep it in a specified operating range ([0137]). Sinha fails to teach determining and regulating the level and amount of power flow through the second transmission line. Morita teaches a current limiting element (power flow controller) coupled to a superconductor, which selectively regulates the power flowing through the superconductor. Morita also teaches the current limiting element, which can increase its

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resistance level when the current through a superconductor exceeds a critical level. This increase in resistance limits the current (and in turn, the power) by an incremental and variable amount depending upon the amount of current that was flowing initially and the increase in resistance level (Col. 1, lines 35-59; Col. 8, lines 30-36). Hingorani teaches a bi-directional power flow controller which determines and regulates the power flowing in the transmission line (Col. 2, lines 45-47, 51-55). It would have been obvious to one of ordinary skill in the art at the time of the invention to implement Morita's power flow controller with the bi-directional characteristic of Hingorani's controller on the superconducting line of Sinha's invention so that the operator can have more control over the flow of power in the system.

9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sinha et al. (2003/0183410), Morita (6,344,956) and Hingorani (5,420,495) as applied to claim 10 above, and further in view of Shimomura et al. (JP 11122793A). Sinha, Morita, and Hingorani teach a multi-line power transmission system. Neither reference explicitly teaches what the first transmission line is made of. Shimomura teaches a power transmission line which is a cross-linked polyethylene power transmission line (USE). It would have been obvious to one of ordinary skill in the art at the time of the invention to implement this transmission line into Sinha's invention since it is known in the art as a working power transmission line that carries high voltages and Sinha doesn't teach a specific type in his invention.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

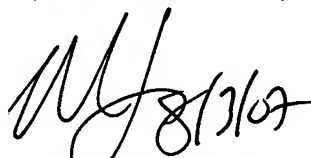
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dru M. Parries whose telephone number is (571) 272-8542. The examiner can normally be reached on Monday -Thursday from 9:00am to 6:00pm. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry, can be reached on 571-272-2800 x 36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DMP

7-26-2007



MICHAEL SHERRY
SUPERVISORY PATENT EXAMINER